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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,461	12/28/2001	Bruce W. Rose	42390P12398	1048

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EXAMINER	
MILORD, MARCEAU	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/039,461	ROSE ET AL.	
	Examiner	Art Unit	
	Marceau Milord	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-5,7-10 and 12-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-5,7-10 and 12-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-5, 7-10, 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin (US Patent No 6658264 B1) in view of Standke et al (US Patent No 6816711 B2).

Regarding claims 7, 2 and 4, Irwin discloses a portable communication device (figs. 1-3) comprising: a first transceiver (210 of fig. 2 or 372 of fig. 3); a second transceiver (220 of fig. 2 or 344 of fig. 3; col. 4, line 18-col. 5, line 29); and a switch (324 of fig. 3) to couple the first transceiver to an antennae, wherein the first switch ha an input node directly connected to the antennae (col. 2, line 45- col. 3, line 11; col. 5, lines 18-29; col. 5, line 60- col. 6, line 47)

However, Irwin does not specifically disclose that the first switch is a micro-electromechanical system switch; and a field effect transistor switch coupled to an output of the first MEMS switch.

On the other hand, Standke et al, from the same field of endeavor, discloses an antenna sharing system that includes a first matching network coupled to a first circuit; a second matching network coupled to a second circuit; and a switch having a first throw coupled to the first network, a second throw coupled to the second network, and a pole coupled to the antenna. The system further includes a controller for selectively actuating the switch whereby the first network is coupled to the antenna in a first operational mode and the second network is coupled to the antenna in a second operational mode. In addition, the first network provides an impedance match to the switch and the antenna with respect to the first circuit. The second network provides an impedance match to the switch and the antenna with respect to the second circuit (col. 1, lines 46- 67 col. 3, lines 45-61). The switch is an electronic switch, e.g. micro-electro-mechanical switch, field effect transistor, PIN diode (figs. 1-2;col. 2, lines 42-51). Furthermore, the first network provides isolation between the first circuit and the antenna-matching network at GPS frequencies. The second network provides isolation between the second circuit and the antenna-matching network at cellular frequencies (col. 4, lines 5-24; col. 4, lines 58-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Standke to the communication system of Irwin in order to integrate an internal radiotelephone antenna in a wireless communication devices that can operate within multiple frequency bands.

Regarding claim 3, Irwin as modified discloses a portable communication device (figs. 1-3) comprising: a first transceiver (210 of fig. 2 or 372 of fig. 3); a second transceiver (220 of fig. 2 or 344 of fig. 3; col. 4, line 18-col. 5, line 29), wherein the first transceiver and the second

transceiver are adapted to communicate at about 1 .9 GHz, 1.8 GHz, or 900 MHz (col. 4, lines 38- 54; col. 6, lines 8- 38).

Regarding claims 8-9, Irwin as applied to claim 7 above differs from claims 8-9 in the present invention, in that Irwin fails to disclose the first MEMS switch includes a cantilever adapted to move to a first position to couple the antennae to the first transceiver, wherein the cantilever of the first MEMS switch is adapted to move to a second position to disconnect the antennae from the first transceiver, wherein the first MEMS switch has an input node directly connected to the antennae, wherein the field effect transistor switch and the first MEMS switch are contained within the same semiconductor substrate.

However, Standke et al, from the same field of endeavor, discloses an antenna sharing system that includes a first matching network coupled to a first circuit; a second matching network coupled to a second circuit; and a switch having a first throw coupled to the first network, a second throw coupled to the second network, and a pole coupled to the antenna. The system further includes a controller for selectively actuating the switch whereby the first network is coupled to the antenna in a first operational mode and the second network is coupled to the antenna in a second operational mode. In addition, the first network provides an impedance match to the switch and the antenna with respect to the first circuit. The second network provides an impedance match to the switch and the antenna with respect to the second circuit (col. 1, lines 46- 67 col. 3, lines 45-61). The switch is an electronic switch, e.g. micro-electro-mechanical switch, field effect transistor, PIN diode (figs. 1-2;col. 2, lines 42-51). Furthermore, the first network provides isolation between the first circuit and the antenna-matching network at GPS frequencies. The second network provides isolation between the second circuit and the antenna-

matching network at cellular frequencies (col. 4, lines 5-24; col. 4, lines 58-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Standke to the communication system of Irwin in order to integrate an internal radiotelephone antenna in a wireless communication devices that can operate within multiple frequency bands.

Regarding claim 10, Irwin discloses a portable communication device (figs. 1-3) comprising: an antennae (222 of fig. 2; it could be a plurality of antennas, col. 5, lines 20-25, or 374 of fig. 3, col. 6, lines 8-16); a first switch (324 of fig. 3) that is enabled with an electrical signal; a first transceiver (210 of fig. 2 or 372 of fig. 3); wherein the switch (324 of fig. 3) is adapted to coupled the first transceiver to the antennae; and a second transceiver (220 of fig. 2 or 344 of fig. 3), wherein the switch is adapted to coupled the second transceiver to the antennae (220 of fig. 2 or 344 of fig. 3; col. 4, line 18-col. 5, line 29)(col. 2, line 45- col. 3, line 11; col. 5, lines 18-29; col. 5, line 60- col. 6, line 47).

However, Irwin does not specifically disclose that the first switch is a micro-electromechanical system switch; and the second switch is a mechanical switch that is adapted to couple the second transceiver to the antennae, wherein the second mechanical switch that is enabled with an electrical signal; and a field effect transistor switch coupled to the first MEMS switch.

On the other hand, Standke et al, from the same field of endeavor, discloses an antenna sharing system that includes a first matching network coupled to a first circuit; a second matching network coupled to a second circuit; and a switch having a first throw coupled to the first network, a second throw coupled to the second network, and a pole coupled to the antenna.

The system further includes a controller for selectively actuating the switch whereby the first network is coupled to the antenna in a first operational mode and the second network is coupled to the antenna in a second operational mode. In addition, the first network provides an impedance match to the switch and the antenna with respect to the first circuit. The second network provides an impedance match to the switch and the antenna with respect to the second circuit (col. 1, lines 46- 67 col. 3, lines 45-61). The switch is an electronic switch, e.g. micro-electro-mechanical switch, field effect transistor, PIN diode (figs. 1-2;col. 2, lines 42-51). Furthermore, the first network provides isolation between the first circuit and the antenna-matching network at GPS frequencies. The second network provides isolation between the second circuit and the antenna-matching network at cellular frequencies (col. 4, lines 5-24; col. 4, lines 58-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Standke to the communication system of Irwin in order to integrate an internal radiotelephone antenna in a wireless communication devices that can operate within multiple frequency bands.

Regarding claims 12-15, Irwin as applied to claim10 above differs from claims 12-15 in the present invention, in that Irwin fails to disclose a first field effect transistor switch coupled to the first mechanical switch, wherein the first field effect transistor switch and the first mechanical switch are both formed in the same semiconductor substrate, a second base band module adapted to process signals at a second frequency, the second base band module coupled to the antennae when the second mechanical switch is enabled.

However, Standke et al, discloses an antenna sharing system that includes a first matching network coupled to a first circuit; a second matching network coupled to a second

circuit; and a switch having a first throw coupled to the first network, a second throw coupled to the second network, and a pole coupled to the antenna. The system further includes a controller for selectively actuating the switch whereby the first network is coupled to the antenna in a first operational mode and the second network is coupled to the antenna in a second operational mode. In addition, the first network provides an impedance match to the switch and the antenna with respect to the first circuit. The second network provides an impedance match to the switch and the antenna with respect to the second circuit (col. 1, lines 46- 67 col. 3, lines 45-61). The switch is an electronic switch, e.g. micro-electro-mechanical switch, field effect transistor, PIN diode (figs. 1-2;col. 2, lines 42-51). Furthermore, the first network provides isolation between the first circuit and the antenna-matching network at GPS frequencies. The second network provides isolation between the second circuit and the antenna-matching network at cellular frequencies (col. 4, lines 5-24; col. 4, lines 58-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Standke to the communication system of Irwin in order to integrate an internal radiotelephone antenna in a wireless communication devices that can operate within multiple frequency bands.

Regarding claim 16, Irwin as modified discloses a portable communication device (figs. 1-3), wherein the first frequency is at least twice the second frequency (col. 5, line 7- col. 6, line 47).

Regarding claim 17, Irwin as modified discloses a portable communication device (figs. 1-3), wherein the first frequency is about 1 .9 GHz (col. 4, lines 38- 54; col. 6, lines 8- 38).

Response to Arguments

3. Applicant's arguments filed on April 5, 2006 have been fully considered but they are not persuasive.

Applicant's representative argues that Irwin does not disclose a switch which couples/decouples either first or second transceivers to the antenna and certainly no switch which has an input node directly connected to the antenna.

However, Irwin shows in figure 2, a terminal 110 that includes a first transceiver (210) that communicates with a first wireless communication system (100). The terminal 110 also includes a second transceiver (220) that communicates with a second wireless communication system (120). These two transceivers are connected to an antenna (222). Note that the first and second transceivers can share some circuitry (see figures 2-3; col. 5, lines 7-25). In addition, Irwin also discloses in figure 3, two switches 324 and 334 that are controlled by a controller (380) to determine whether the first transceiver or the second transceiver is used. It will be understood by those having skill in the art that these switches need not be a physical switch and can be implemented by software and/or other means known in the art (col. 5, line 60- col. 6, line 38). It is understood that these switches can have an input node directly connected to the antenna (see figs. 2-3). Note that the MSC is a switch that can switch calls between wireline and mobile subscribers, control signaling to the wireless communication terminals, and control the overall operation of the system.

Standke et al also discloses a first circuit that is a mobile subsystem and the second circuit, which is a Global Positioning System. The system further includes a controller for selectively actuating the switch within the antenna matching circuit connected to the antenna,

whereby the switch is preferably in the off state when the mobile subsystem is active and in the on-state when the GPS subsystem is active. In addition, the switch is an electronic switch, e.g. micro-electro-mechanical switch, field effect transistor, PIN diode etc (figs. 2-3; col. 3, lines 22-59). Standke et al shows in figure 2, a second network that provides isolation between the second circuit and the antenna matching network at cellular frequencies (col. 3,line 63- col. 4, line 28; col. 4, lines 58-67). In response to applicant' s argument that there is no suggestion to combine the references, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re Nomiya, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken, as a whole would suggest to one of ordinary skill in the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971). References are evaluated by what they suggest to one versed in the art, rather that by their specific disclosure. In re Bozec, 163 USPQ 545 (CCPA) 1969. In this case, it would have been obvious for a person having ordinary skill in the pertinent art, at the time the invention was made, to apply the technique of Standke to the communication system of Irwin to integrate an internal radiotelephone antenna in a wireless communication devices that can operate within multiple frequency bands.

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

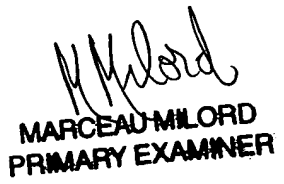
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MARCEAU MILORD



Marceau Milord

Primary Examiner

Art Unit 2618